



# Armed Forces College of Medicine

## AFCM



# Mediastinum

**Professor Dr. Shahira Youssef**

# INTENDED LEARNING OBJECTIVES (ILO)



By the end of this lecture the student will be able to:

1. Define mediastinum and its divisions
2. Describe boundaries of superior, anterior, middle and posterior mediastinum 
3. List contents of each mediastinum
4. Correlate the arrangement of contents of each mediastinum with their clinical significance

# Lecture Plan



1. Part 1 (5 min): Definition of mediastinum
2. Part 2 (35 min): Divisions and contents
3. Part 3 (5 min): Summary
4. Lecture Quiz :(5 min)



# Key points



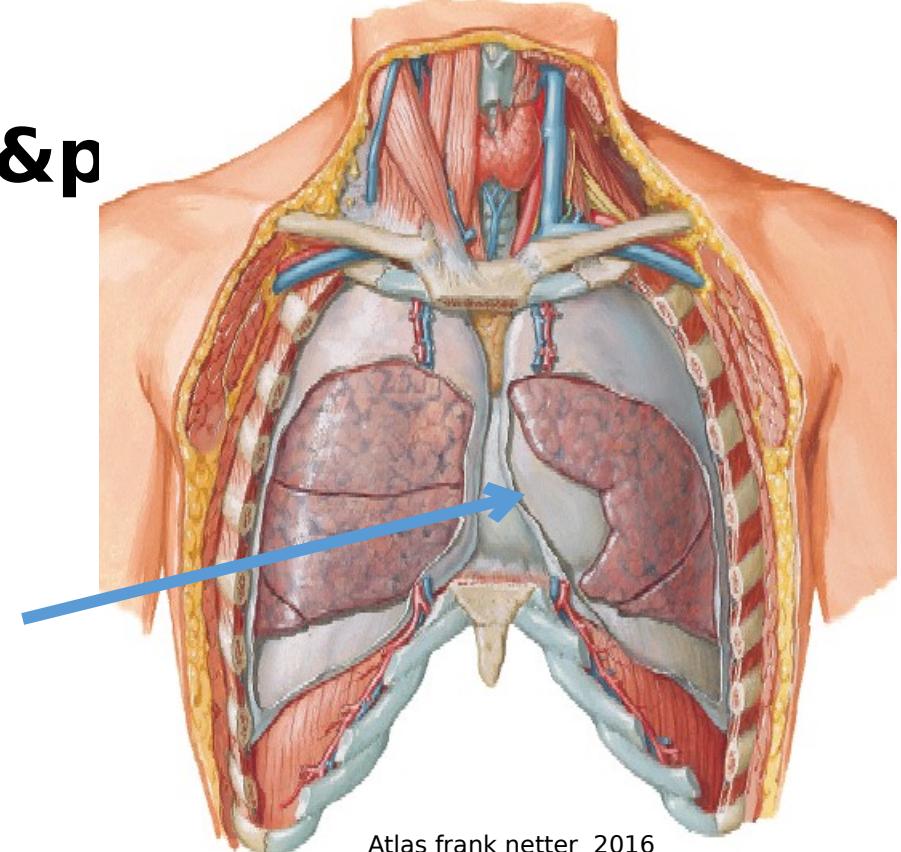
- Divisions of mediastinum
- Level of sternal angle
- Contents of each mediastinum
- Structures common in 2 mediastinum

# Mediastinum

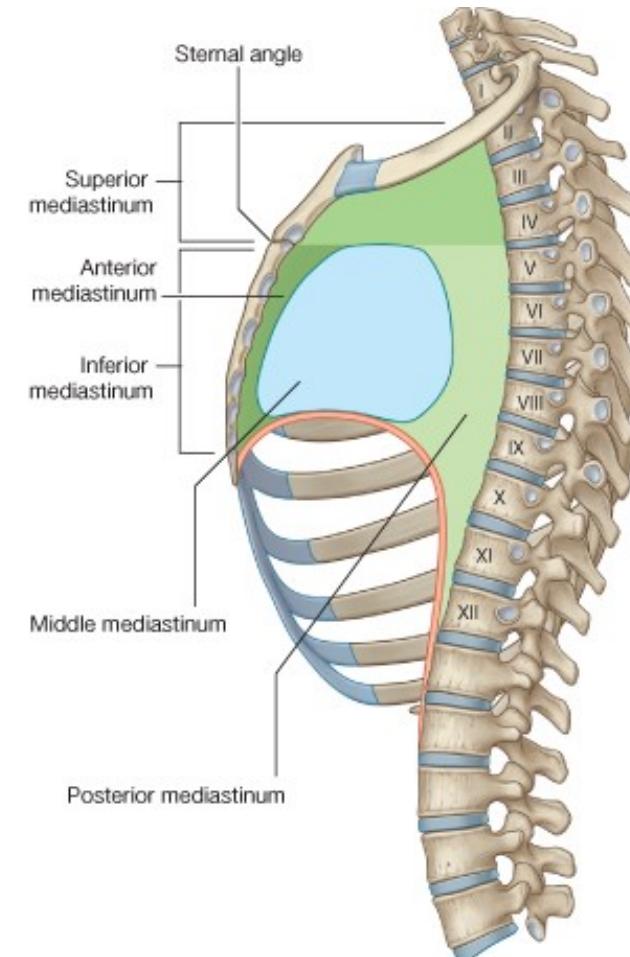
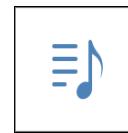
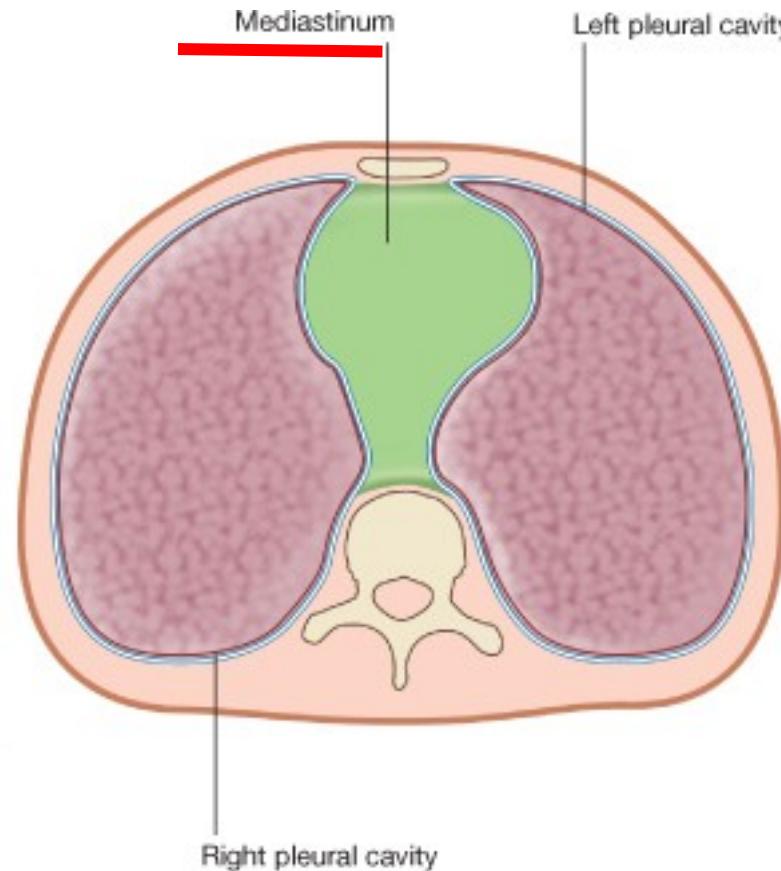


- Thick
- Movable
- Central

Partition between **the two lungs** &



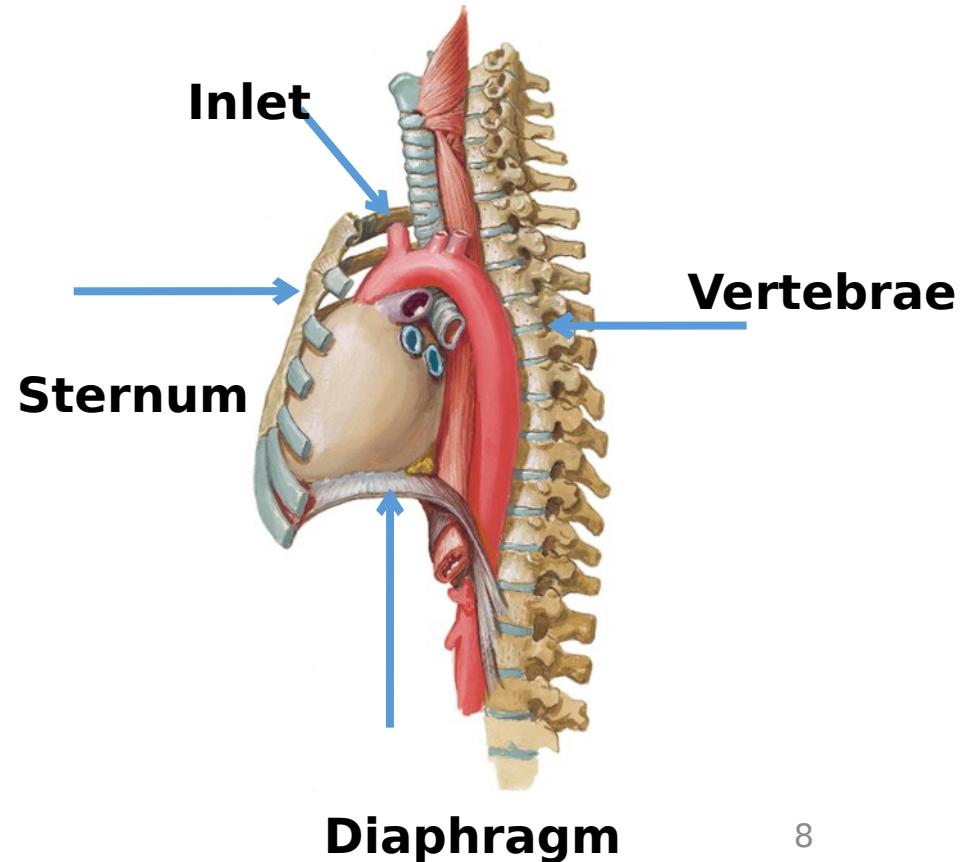
# Mediastinum



# Boundaries of mediastinum



- **Anterior**: sternum& costal cartilages
- **Posterior**: bodies of all thoracic vertebrae
- **Superior** : thoracic inlet & root of neck
- **Inferior** : diaphragm



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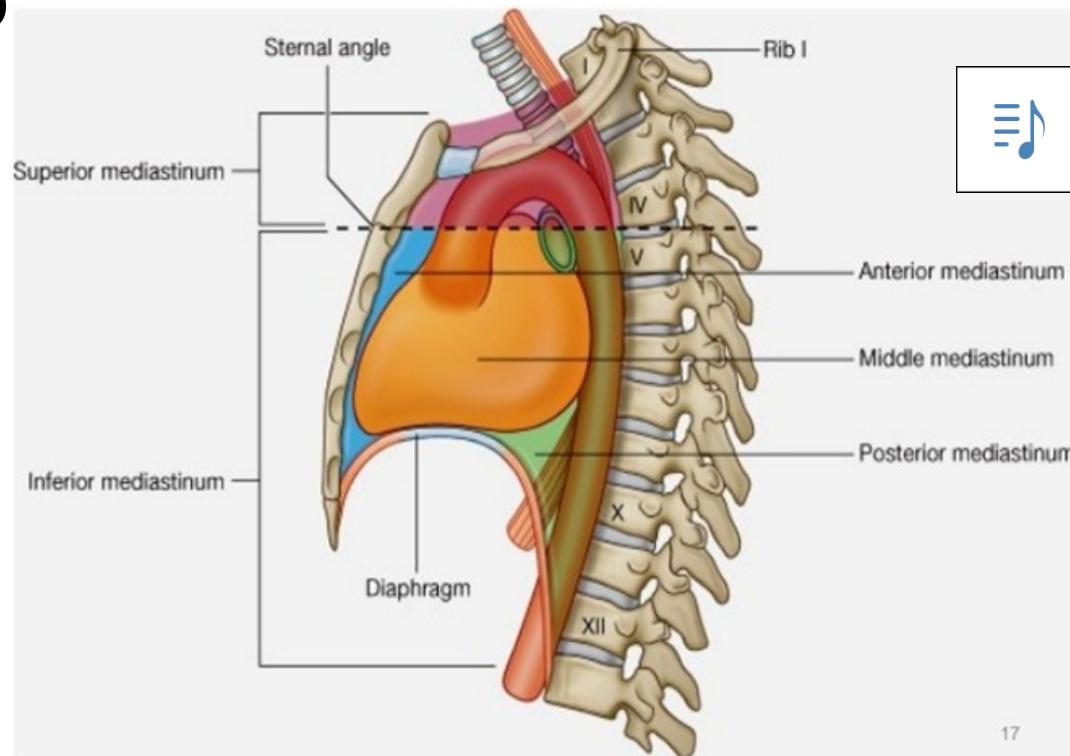
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# Divisions of mediastinum



It is divided by an **imaginary** plane passing from **sternal angle** to lower border of body of **fourth thoracic vertebra** into

Sup



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# Questions

Sternal angle corresponds to which vertebrae?

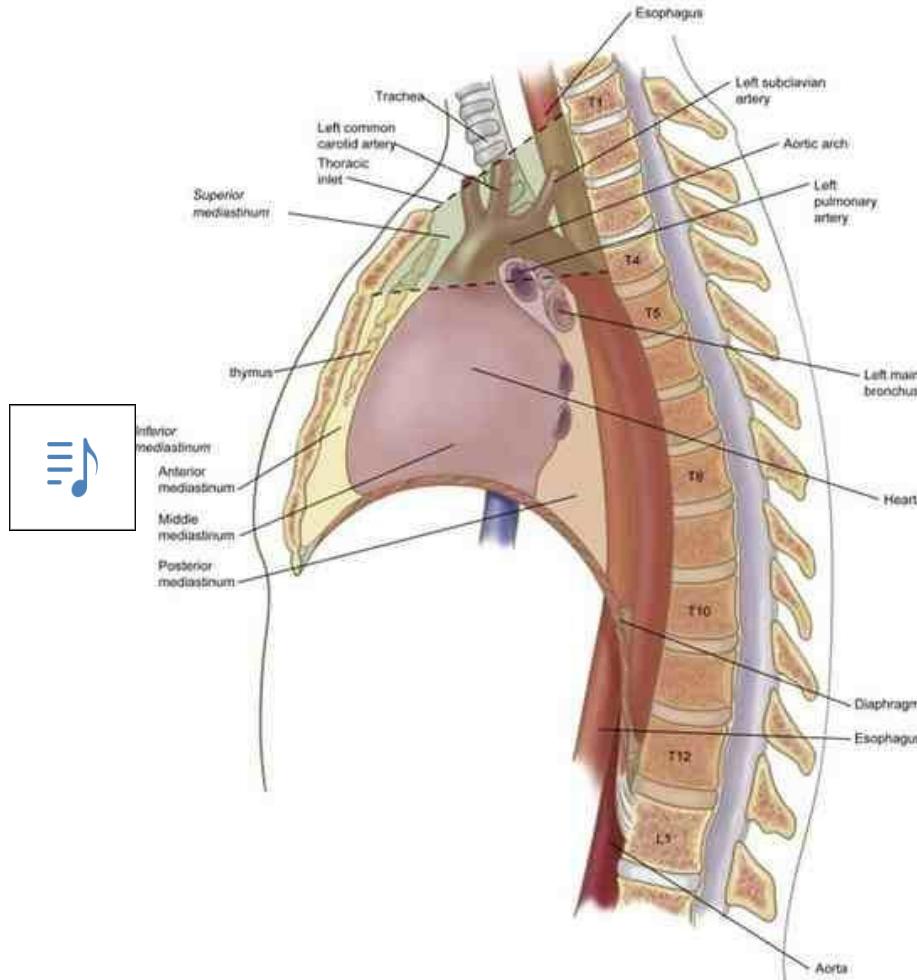
# Divisions of mediastinum

Inferior mediastinum is further subdivided by heart& pericardium into

**Anterior mediastinum:**  
anterior to the heart& pericardium

**Middle mediastinum:**  
contains heart & pericardium

**Posterior mediastinum:**  
Lies posterior to the heart &pericardium



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# Superior mediastinum



## Boundaries:

### ➤ **Anterior :**

back of manubrium sterni

### ➤ **Posterior :**

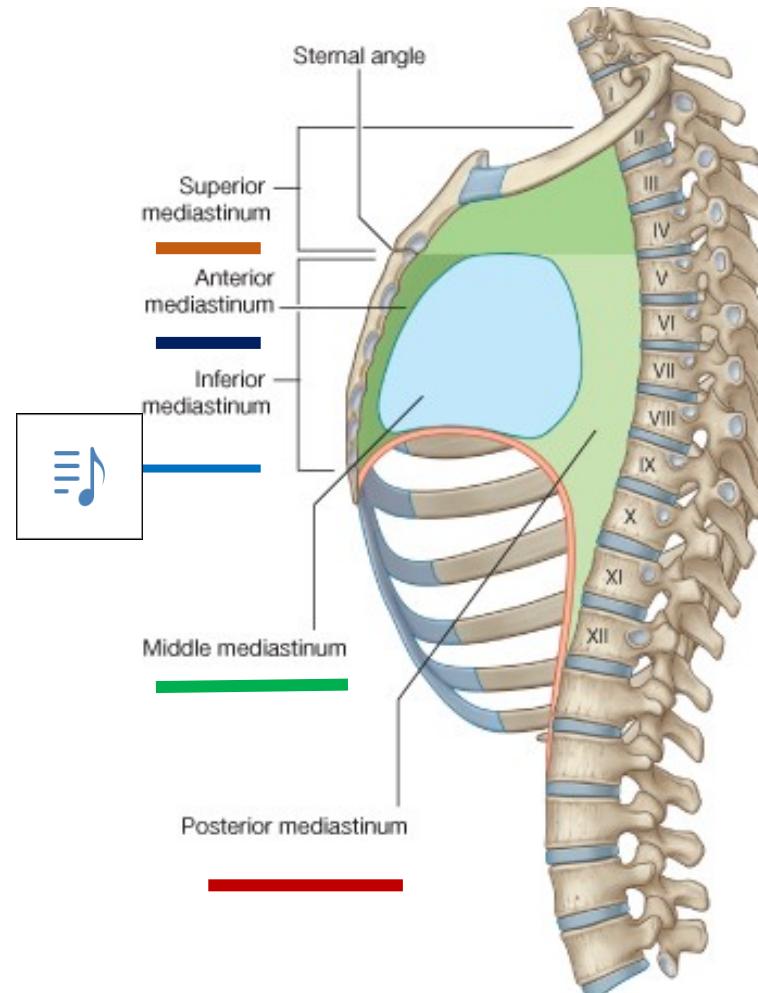
upper 4 thoracic vertebra

### ➤ **Superior:**

thoracic inlet

### ➤ **Inferior :**

imaginary line



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# Contents of superior mediastinum



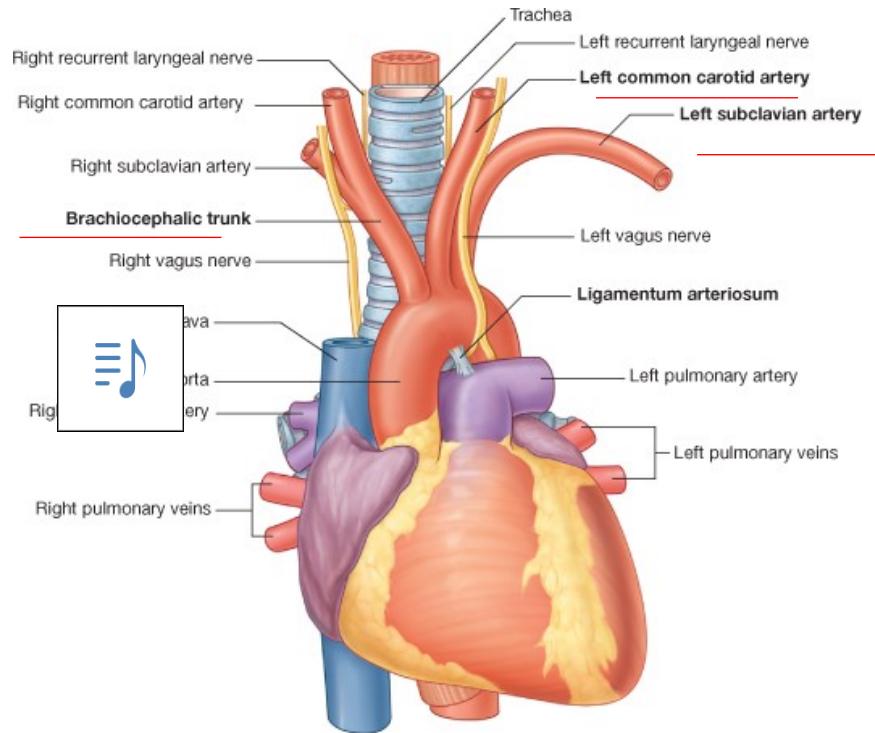
## Muscles:

- Sternohyoid
- Sternothyroid  
arising from back of manubrium.

## Arteries :

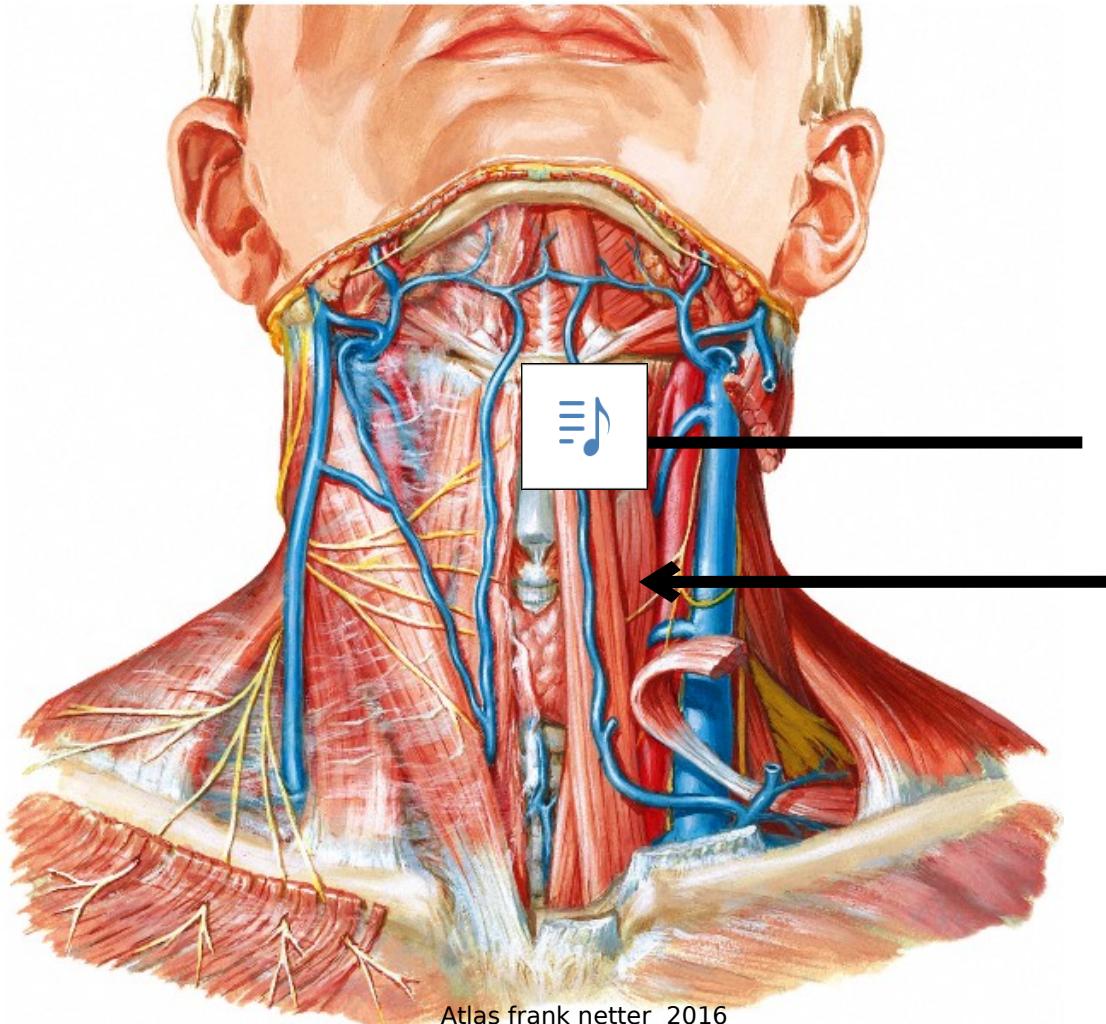
Arch of aorta & its three branches

- ❑ Brachiocephalic
- ❑ Left Common Carotid
- ❑ Left Subclavian



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# Muscles of superior mediastinum



**Sternohyoid**

**Sternothyroid**

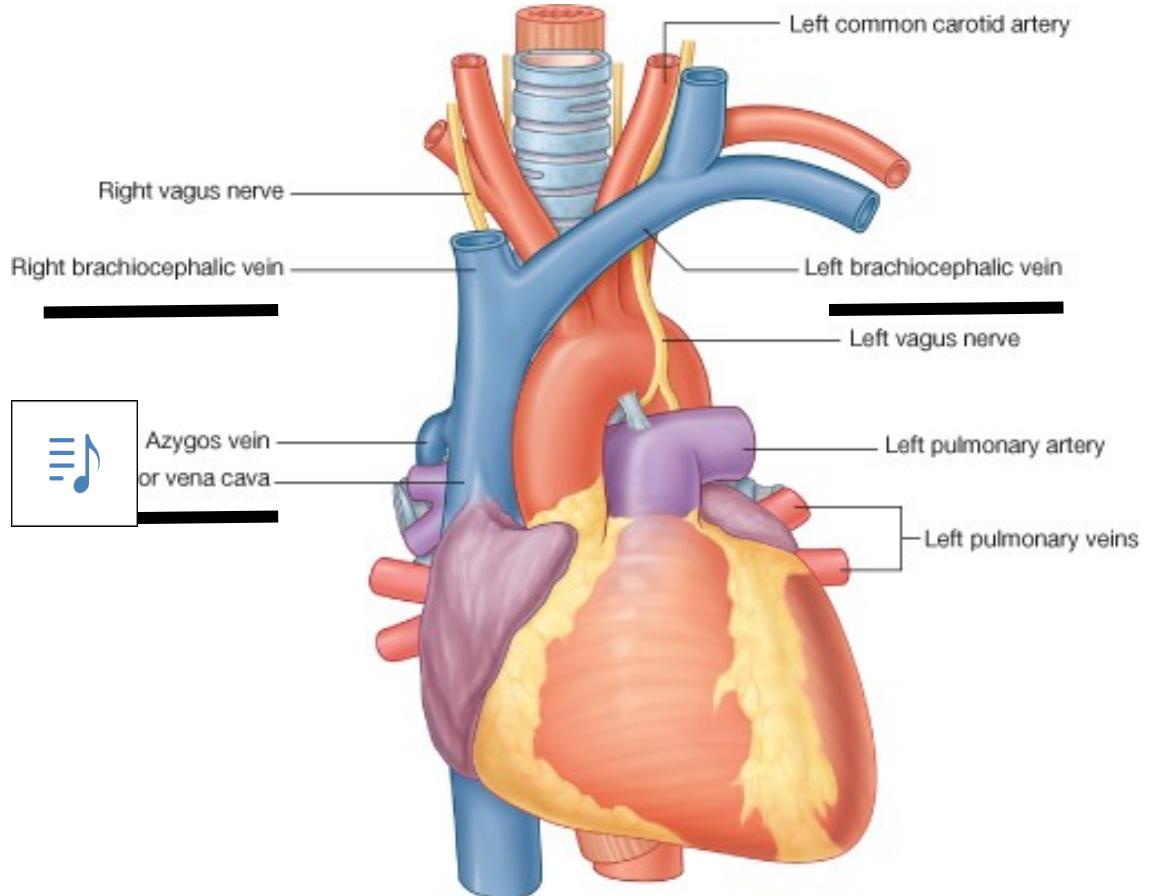
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# Veins of superior mediastinum



## Veins:

- Right brachiocephalic vein
- Left brachiocephalic : crosses over branches of arch of aorta
- Both unite to form SVC behind the right first costal cartilage



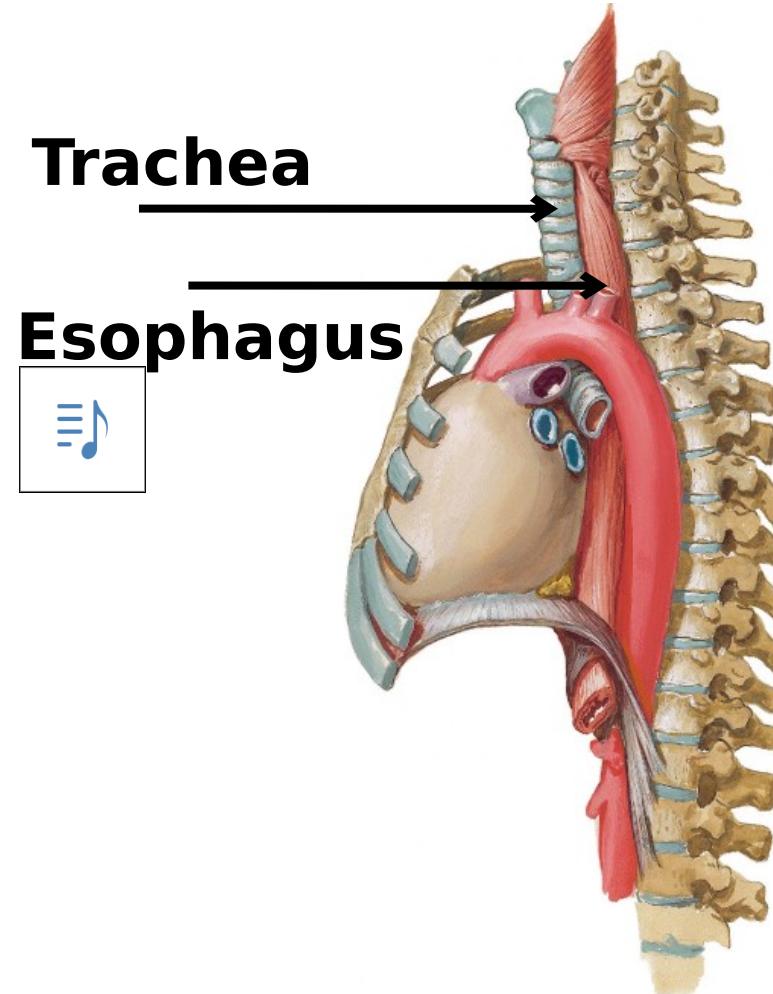
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# Tubes in superior mediastinum



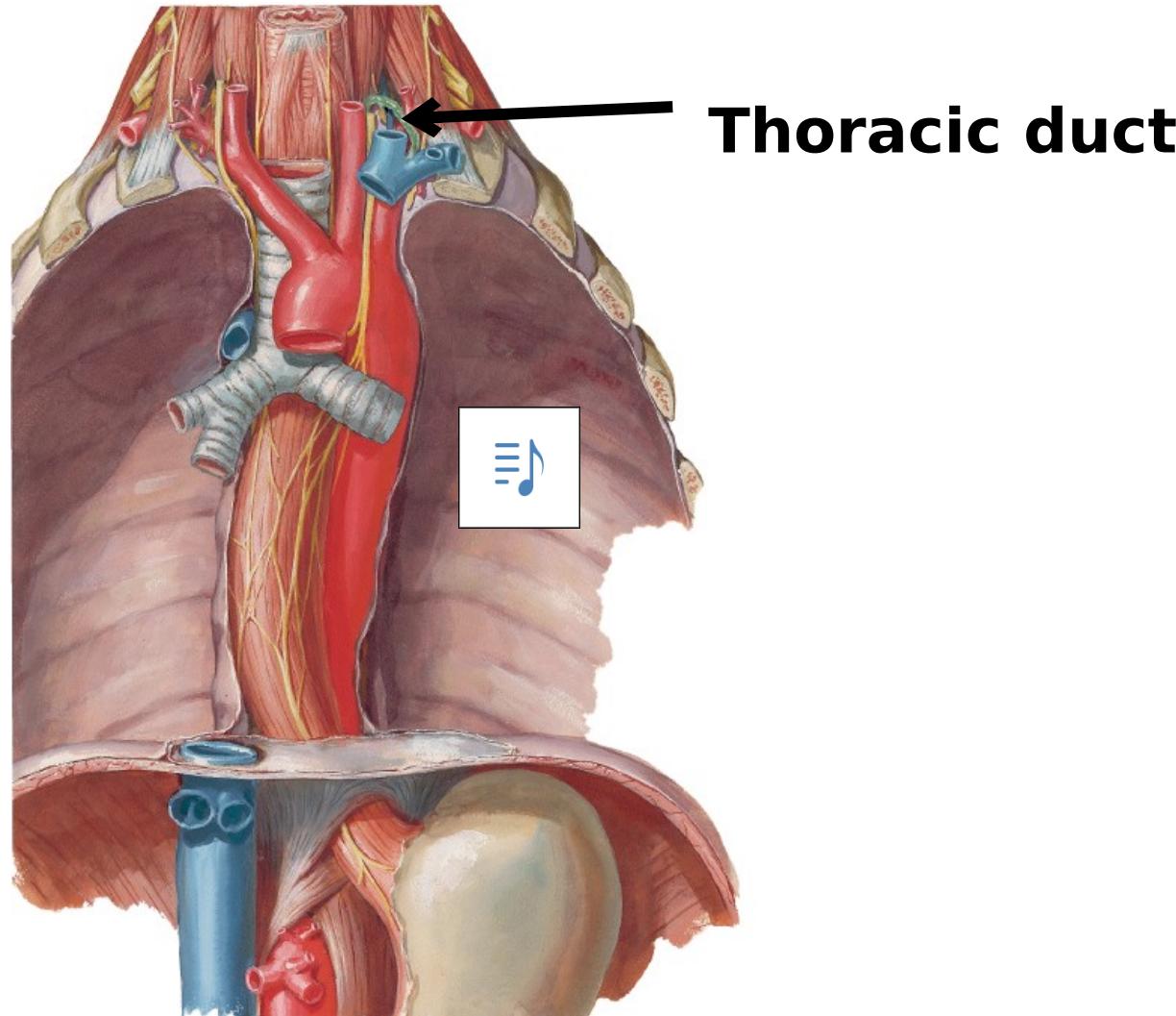
## Tubes :

- ❑ **Trachea** : lies in front of esophagus
- ❑ **Esophagus** : lies posterior to trachea & in front of vertebral column
- ❑ **Thoracic duct** : lies on left side of esophagus
- ❑ **Left recurrent laryngeal nerve**: lies between trachea & esophagus



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# Tubes of superior mediastinum



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Cardiopulmonary module

# Nerves in superior mediastinum



## Nerves :

- **Right phrenic:**

descends on right side of brachiocephalic&SVC

till middle med. anterior to right hilum

- **Left phrenic:**

descends between left common carotid & left

subclavian till middle med. anterior to left hilum

- **Right vagus:**

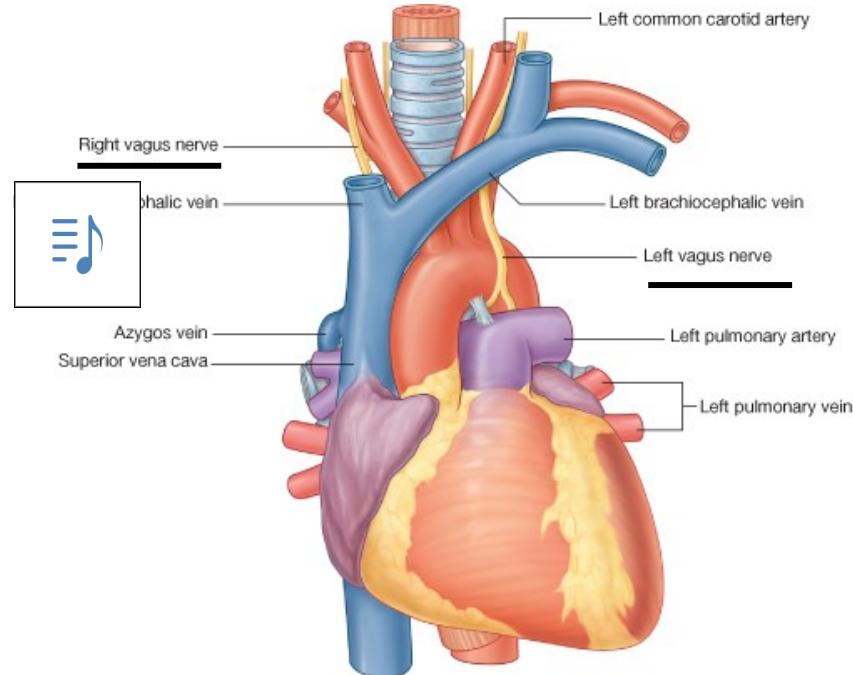
descends on right side of trachea to back of right hilum to form pulmonary plexus

- **Left vagus:**

between LCC & left subclavian to back of left

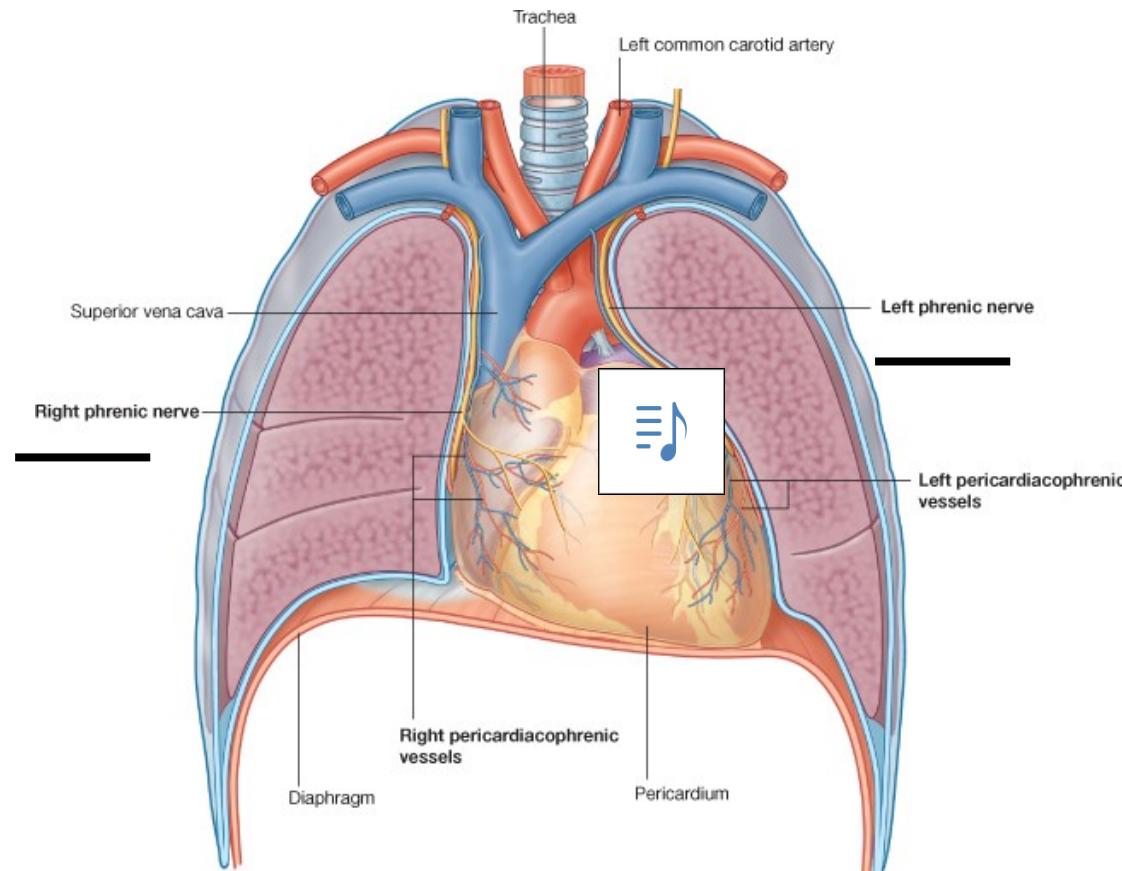
hilum to form pulmonary plexus

**Remnants of thymus** ,  
brachiocephalic lymph nodes& para



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# Nerves in superior mediastinum



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# Questions

- Enumerate vessels in superior mediastinum .....
- Right phrenic nerve passes close to .....
- Left brachiocephalic vein crosses over .....

# Anterior mediastinum

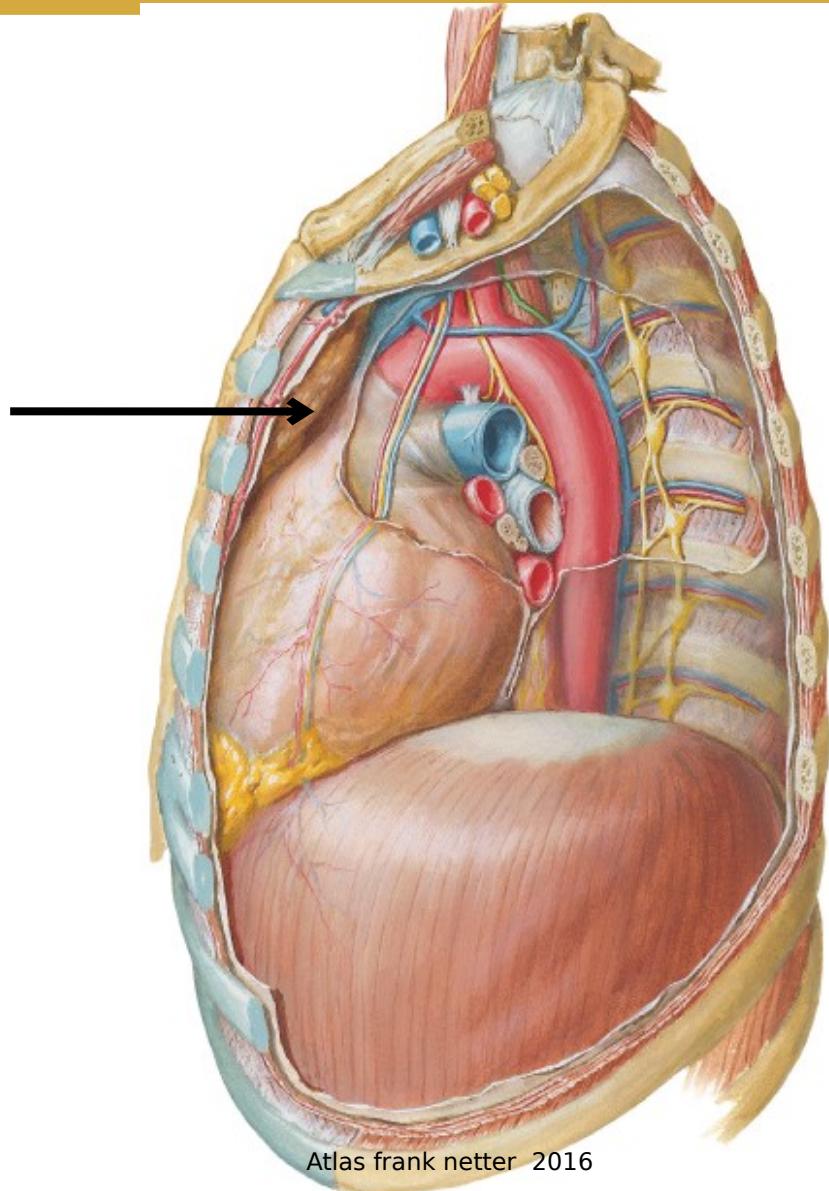


Lies between heart & sternum

## Contents:

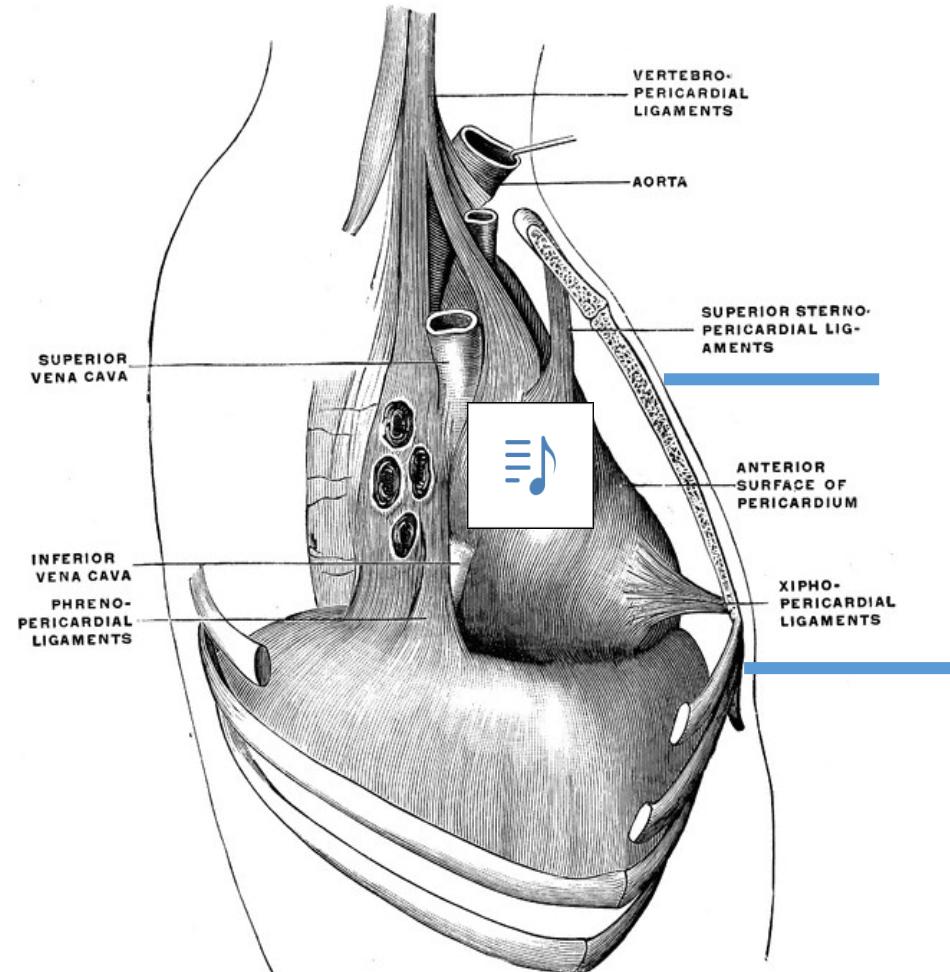
- Thymus**: down to level of 4 costal cartilage
- 2 sterno-pericardial ligaments** (superior & inferior)
- Lymph nodes
- Branches of **internal thoracic artery** (mediastinal branches)

**Thymus**





# Anterior mediastinum



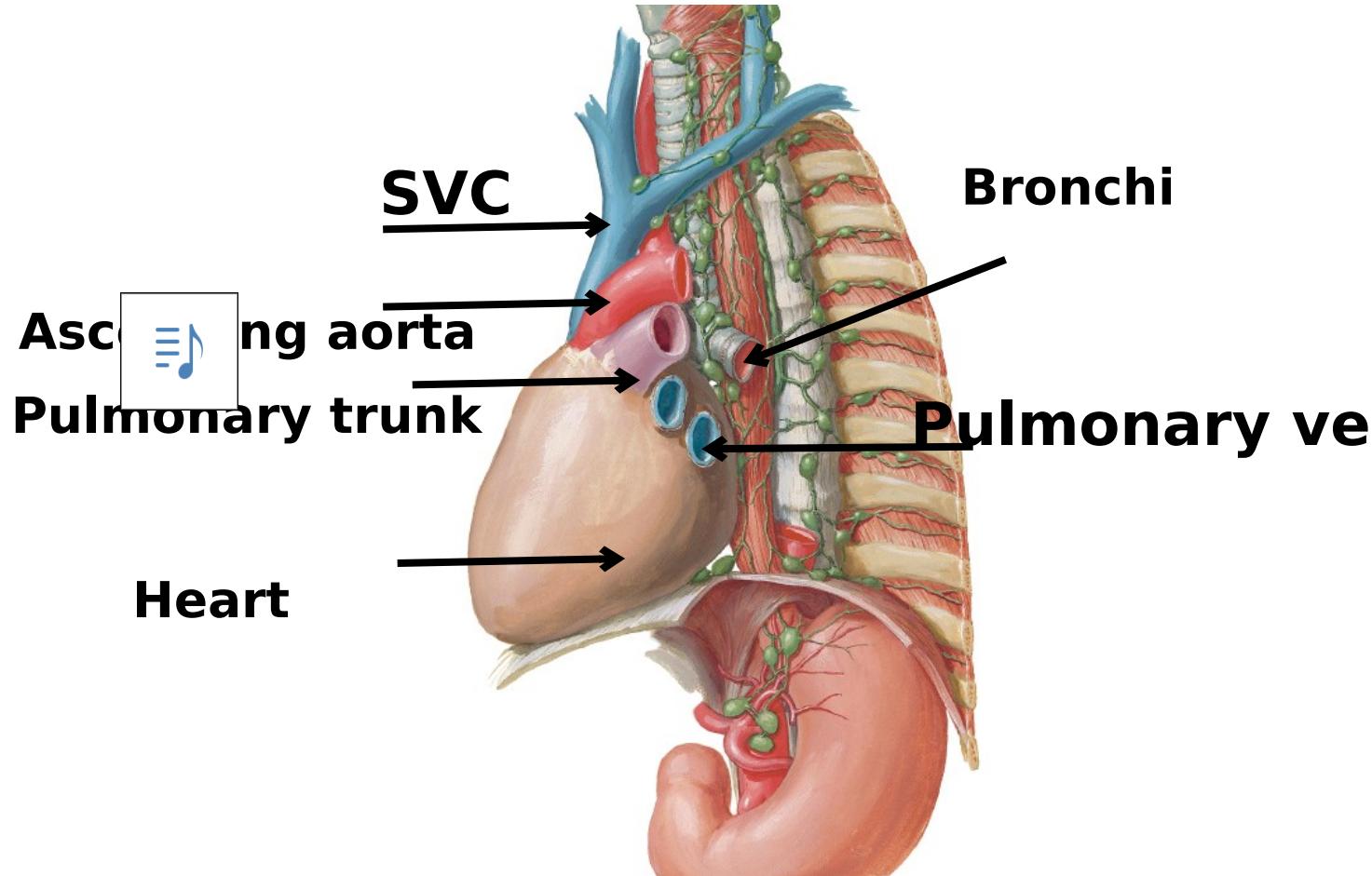
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# Middle mediastinum



## Contents

- ❑ Heart & pericardium
- ❑ Ascending aorta & pulmonary trunk
- ❑ lower part of SVC, upper part of IVC, pulmonary veins & termination of azygos vein in SVC
- ❑ Right & left phrenic nerves
- ❑ Right & left main bronchi
- ❑ Inferior tracheo- bronchial lymph nodes

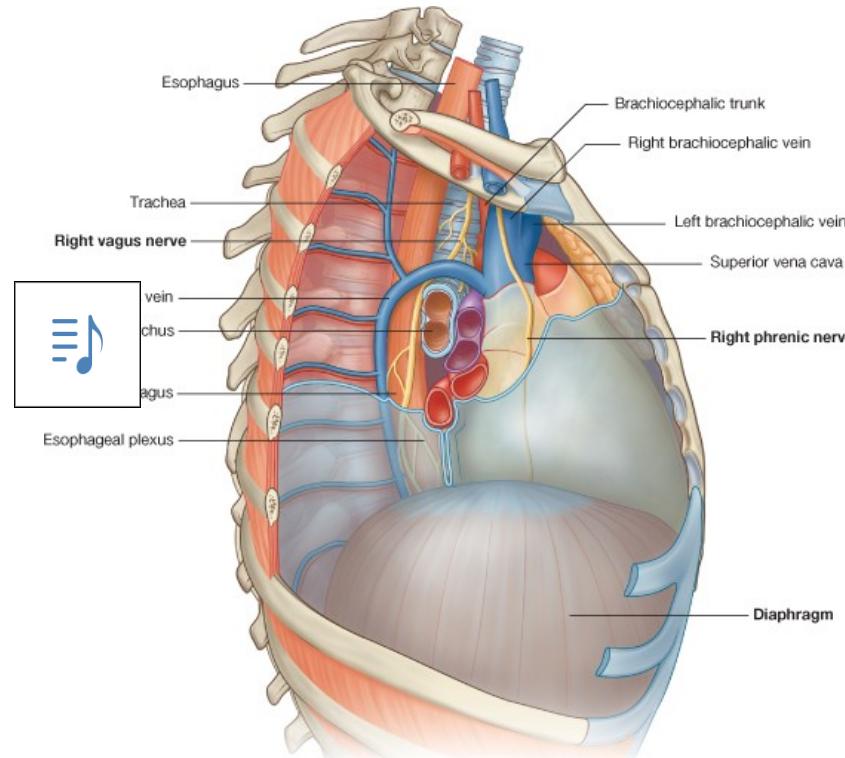


# Posterior mediastinum

Lies posterior to heart & pericardium

## Contents :

- ❑ **Esophagus**
- ❑ **Descending aorta** & posterior intercostal arteries
- ❑ **Thoracic duct**
- ❑ **Azygous vein, hemiazygos** & accessory hemiazygos
- ❑ **Vagi & splanchnic nerves**(greater, lesser & lowest)
- ❑ Posterior mediastinal lymph nodes



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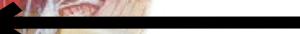
# Posterior mediastinum



**Esophagus**



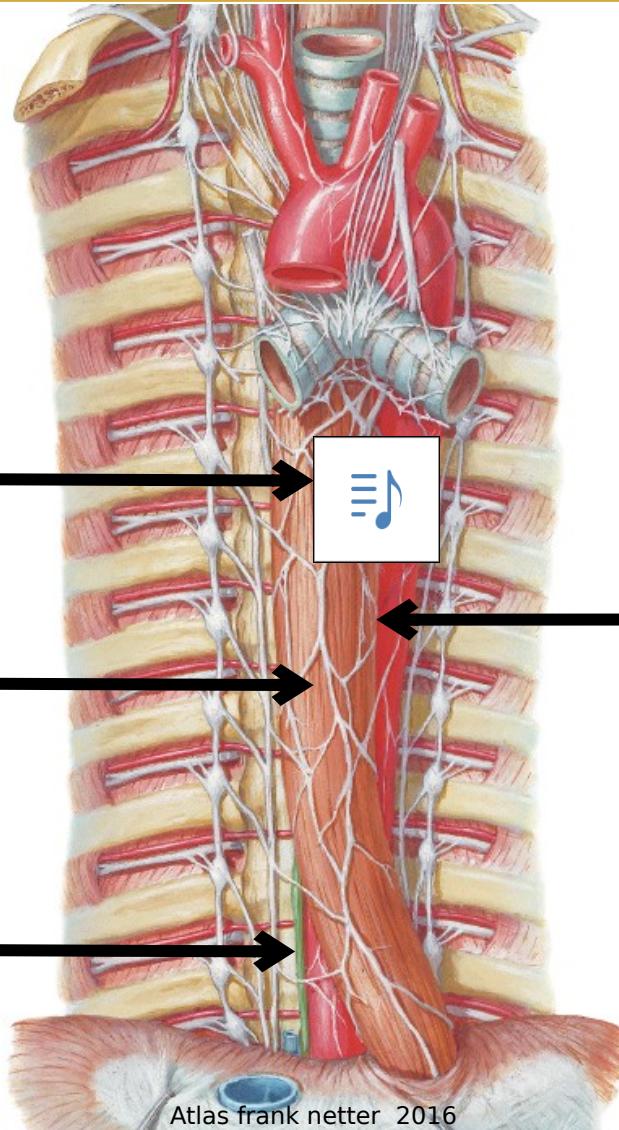
**Descending aorta**



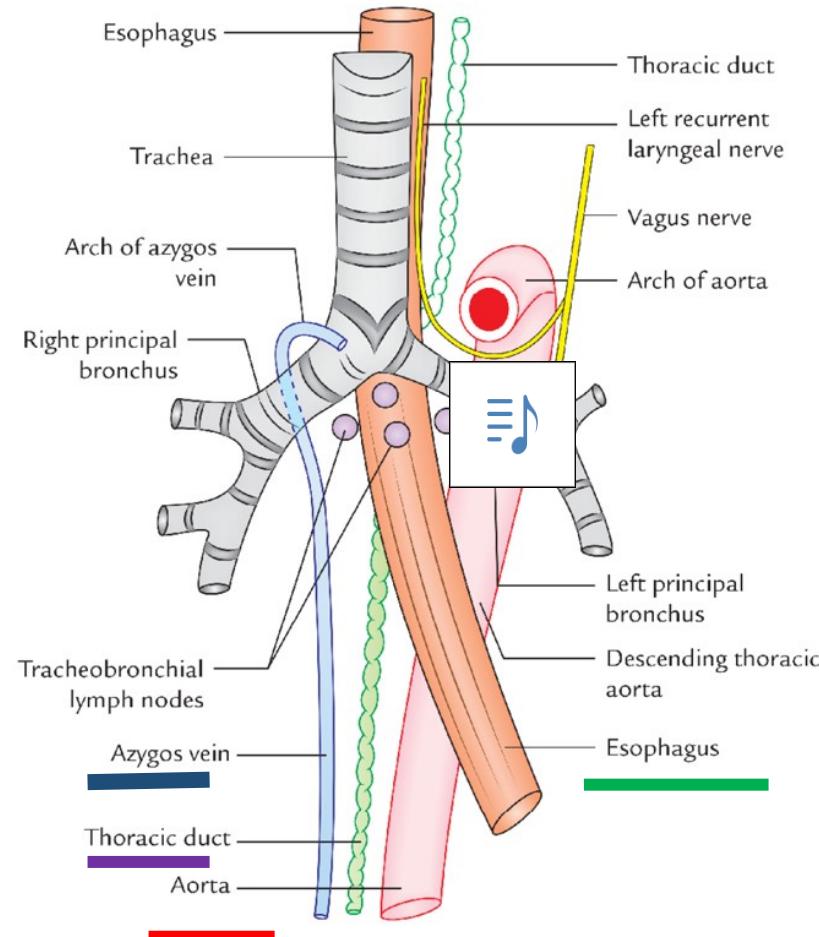
**Vagus**



**Thoracic duct**



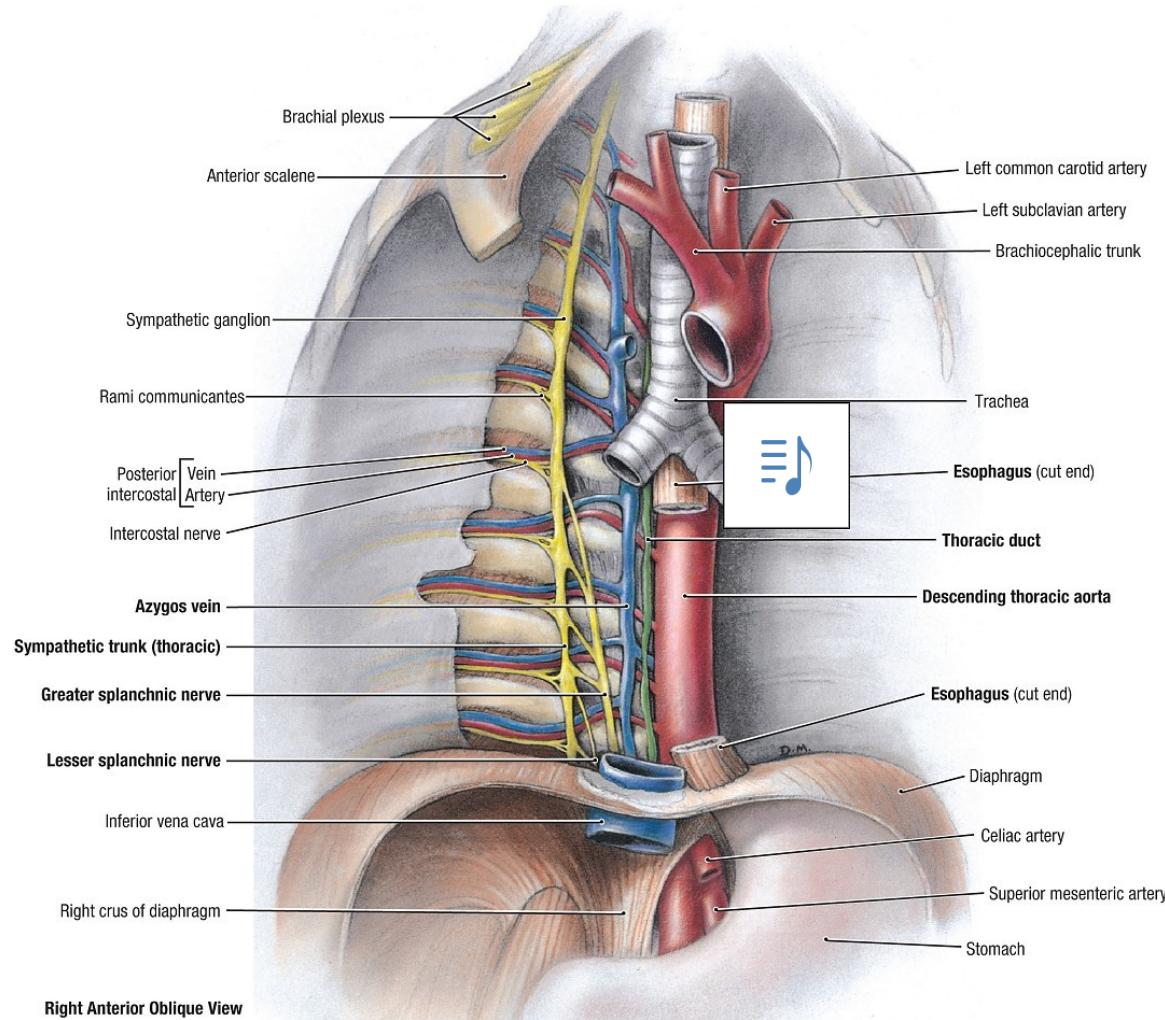
# Posterior mediastinum



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# Posterior mediastinum



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# Questions



Distribute the parts of aorta on mediastinum

Which structures are common between superior and posterior mediastinum

Enumerate vessels in posterior mediastinum

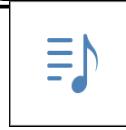


# Esophagus

- Continuation of pharynx opposite 6 cervical vertebra
- Passes in neck & then in superior & posterior mediastinum

## Relations of thoracic part

### ➤ **Anterior :**



Trachea & left recurrent laryngeal , left bronchus & pericardium

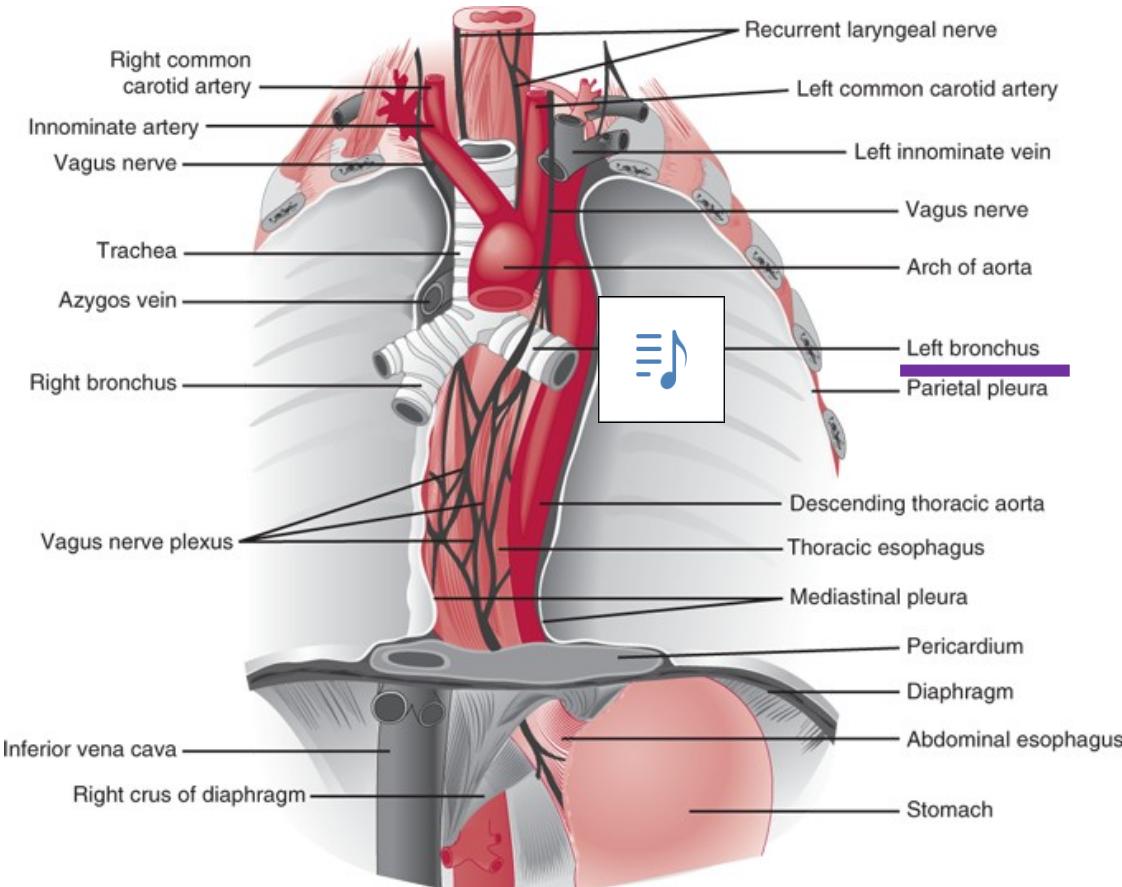
### ➤ **Posterior :**

Vertebral column& thoracic duct & at lower end descending thoracic aorta

Passes in an opening in diaphragm to join the stomach



# Esophagus



Source: Gerard M. Doherty: Current Diagnosis & Treatment: Surgery, 14th Edition

[www.accessmedicine.com](http://www.accessmedicine.com)

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# Lecture Quiz



Question 1: A structure present in both superior and posterior mediastinum

- a) Arch of aorta
- b) Oesophagus
- c) Phrenic nerve
- d) Thymus gland



# SUGGESTED TEXTBOOKS



1. Clinical anatomy by regions 9<sup>th</sup> edition by Richard Snell



